WHAT IS CLAIMED IS:

1. A microfabricated analytical device for at least partially separating the components of a sample, the analytical device comprising:

(a) a first channel having a sample reservoir at one end and a waste reservoir at an opposite end;

(b) a second channel which intersects across the first channel, the second channel comprising an electrophoretic separation channel; and

(c) a pressure system adapted to generate a pressure differential across the first channel so as to move a sample from the sample reservoir across the first channel and into an intersection between the first and second channels.

2. A microfabricated analytical device for at least partially separating the components of a sample, the analytical device comprising:

(a) a first channel having a sample reservoir at one end and a waste reservoir at an opposite end;

(b) a second channel which intersects across the first channel, the second channel comprising an electrophoretic separation channel; and

(c) an electrokinetic system adapted to electrokinetically move a sample from the sample reservoir across the first channel and into an intersection between the first and second channels.

3. The microfabricated analytical device of claims 1 or 2, wherein, the sample reservoir further contains an injection interface.

4. The microfabricated analytical device of claims 1 or 2, further comprising:

a detector positioned along the second channel.

5. A microfabricated analytical device according to claim 1, wherein the sample includes DNA fragments.

6. A microfabricated analytical device according to claim 5, further comprising:

a sieving matrix deposited in the second channel.

7. The microfabricated analytical device of claims 1 or 2, further comprising:

a capillary tube in fluid communication with the sample reservoir, the capillary tube adapted to load a plurality of sample plugs in sequence into the sample reservoir.

8. An analytical device for at least partially separating the components of a sample, the analytical device comprising:

(a) a sample reservoir;

(b) a first channel extending from the sample reservoir;

(c) a second channel which intersects with the first channel, the first and second channels being in fluid communication;

(d) a pressure differential generator adapted to generate a pressure differential across the first channel; and

(e) an electric field generator adapted to create an electrical field in the second channel.

9. The analytical device of claims 1, 2 or 8, wherein the sample reservoir is adapted to receive samples having a volume of approximately 1 microliter or less.

10. The analytical device of claim 8, wherein the sample reservoir is in fluid communication with a capillary tube, the capillary tube being adapted to transfer multiple samples into the sample reservoir.

11. The analytical device of claims 1, 2 or 8, further comprising a sieving matrix in the second channel acting, in conjunction with the electric field, to at least partially separate the components in the sample.

12. The analytical device of claim 11, wherein the sieving matrix is selected from the group consisting of acrylamide, hydroxy cellulose, polyvinyl alcohol and polyethelene oxide.

13. The analytical device of claims 1, 2 or 8, wherein the first and second channel have a diameter of less than 300 microns.

14. The analytical device of claims 1, 2 or 8, wherein the first and second channel have a diameter of less than 200 microns.

15. The analytical device of claims 1, 2 or 8, wherein the first and second channel have a diameter of less than 100 microns.

16. A system for simultaneously analyzing a plurality of samples, comprising:

a plurality of analytical devices as set forth in any of claims 1, 2, or 8, wherein the plurality of analytical devices are fabricated on the surface of a single substrate.

17. The system of claim 16, wherein,

the plurality of analytical devices share a common waste reservoir.

18. The system of claim 16, wherein,

the second channels of the plurality of analytical devices share at least one common electrode.

19. The system of claim 16, wherein,

the second channels of the plurality of analytical devices share two common electrodes.

20. A method for transporting a sample using a device which includes a first channel having a sample reservoir at one end and a waste reservoir at an opposite end and a second channel which intersects across the first channel, comprising:

(a) loading the sample into the sample reservoir;

(b) generating a first force in the first channel to move the sample along the first channel; and

(c) applying a second force in the second channel to move at least a portion of the sample into the second channel, the second force being of a different type than the first force.

21. The method of claim 20, wherein the first force is a pressure differential and the second force is an electric field.

22. The method of claim 20, further comprising:
electrophoretically separating the sample in the second channel.

23. The method of claim 20, further comprising:
loading a plurality of sample plugs in sequence into the sample reservoir with a capillary tube in fluid communication with the sample reservoir.

24. The method of claim 23, wherein the plurality of sample plugs are the same fluid sample.

25. The method of claim 23, wherein the plurality of sample plugs are different fluid samples.

26. The method of claim 23, further comprising:
separating the sample plugs with plugs of buffer positioned therebetween.

27. The method of claim 21, further comprising:
separating the sample plugs with air bubbles positioned therebetween.

28. The method of claim 20, wherein the sample includes DNA fragments and wherein the second channel includes a sieving matrix, the sieving matrix and the electric field acting to at least partially separate the DNA fragments in the sample.

29. A method for analyzing a sample using a device which includes (i) a sample reservoir into which the sample is placed; (ii) a first channel in fluid communication with the sample reservoir and adapted for receiving the sample, (iii) a second channel which intersects with the first channel and which is adapted to receive at least a portion of the sample, the first and second channel being connected so as to provide continuous fluid communication between the first and second channel, (iv) a pressure differential generator, and (v) an electric field generator, the method comprising:

(a) loading the sample into the sample reservoir;

(b) generating a pressure differential in the first channel with the pressure differential generator, the pressure differential acting to move the sample from the sample reservoir into and along the first channel; and

(c) applying an electric field to the second channel using the electric field generator, the electric field acting to move at least a portion of the sample into the second channel.

30. The method of claim 29, wherein loading involves loading multiple samples into the sample reservoir prior to generating a pressure differential.

31. The method of claim 29, wherein loading involves loading multiple samples into the sample reservoir in real time concurrently with maintaining a pressure differential.

32. The method of claim 29, wherein loading involves loading a sample which has a volume of approximately 1 microliter or less.

33. The method of claim 29, further comprising introducing a sieving material into the first and second channel prior to loading the sample into the sample reservoir.

34. The method of claim 33, wherein the sieving material is selected from the group consisting of acrylamide, hydroxy cellulose, polyvinyl alcohol and polyethelene oxide.

35. The method of claim 34, wherein the electric field and the sieving matrix act to at least partially separate the components in the sample by size.

36. An analytical method for the serial injection of multiple samples using a device which includes (i) a sample reservoir designed to receive the samples, (ii) a first channel in fluid communication with the sample reservoir and adapted for receiving the samples, and (ii) a second channel which intersects at an angle with the first channel and is adapted to receive a portion of the samples, the method comprising:

(a) loading multiple samples into the sample reservoir; and

(b) controllably moving the samples along the first channel and diverting a portion of each of the samples into the second channel.

37. The method of claim 36, wherein loading multiple samples comprises:

(a) injecting a first sample into the sample reservoir;

(b) placing a layer of buffer over the first sample;

(c) adding a second sample over the layer of buffer; and

(d) repeating steps (b) and (c) with additional samples.

38. The method of claim 36, wherein loading multiple samples comprises:

(a) injecting a first sample into the sample reservoir;

(b) placing an air bubble over the first sample;

(c) adding a second sample over the air bubble; and

(d) repeating steps (b) and (c) with additional samples.

39. The method of claim 36, wherein loading multiple samples comprises:

(a) injecting a first sample into the sample reservoir;

(b) placing an air bubble over the first sample;

(c) placing a layer of buffer over the air bubble;

(d) placing an air bubble over the layer of buffer;

(e) adding a second sample over the air bubble; and

(f) repeating steps (b) to (e) with additional samples.

40. The method of claim 36, wherein controllably moving the samples along the first channel comprises applying a first force to the first channel and applying a second force to the second channel, the second force being of a different type than the first force.

41. The method of claim 40, wherein the first force is a pressure differential and the second force is an electric field.